(No Model.)

R. ATHERTON.

TENSION DEVICE FOR SPINNING FRAMES.

No. 520,473. Patented May 29, 1894.

Fig: 1.

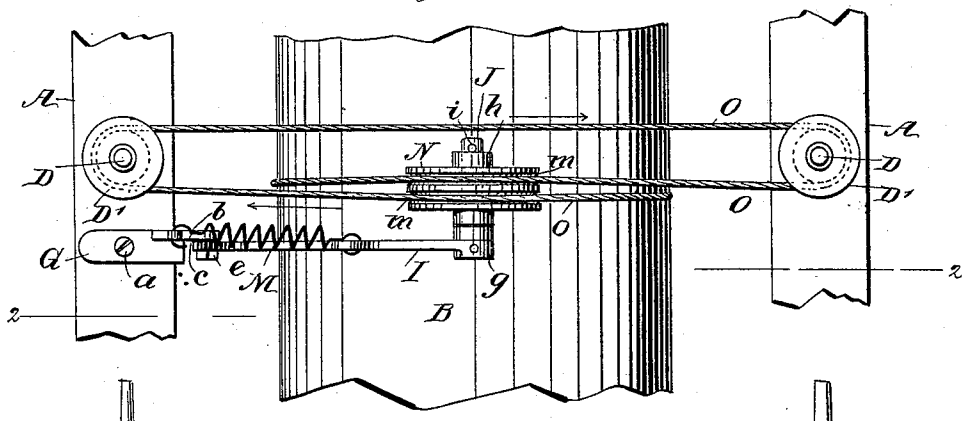

Fig: 2.

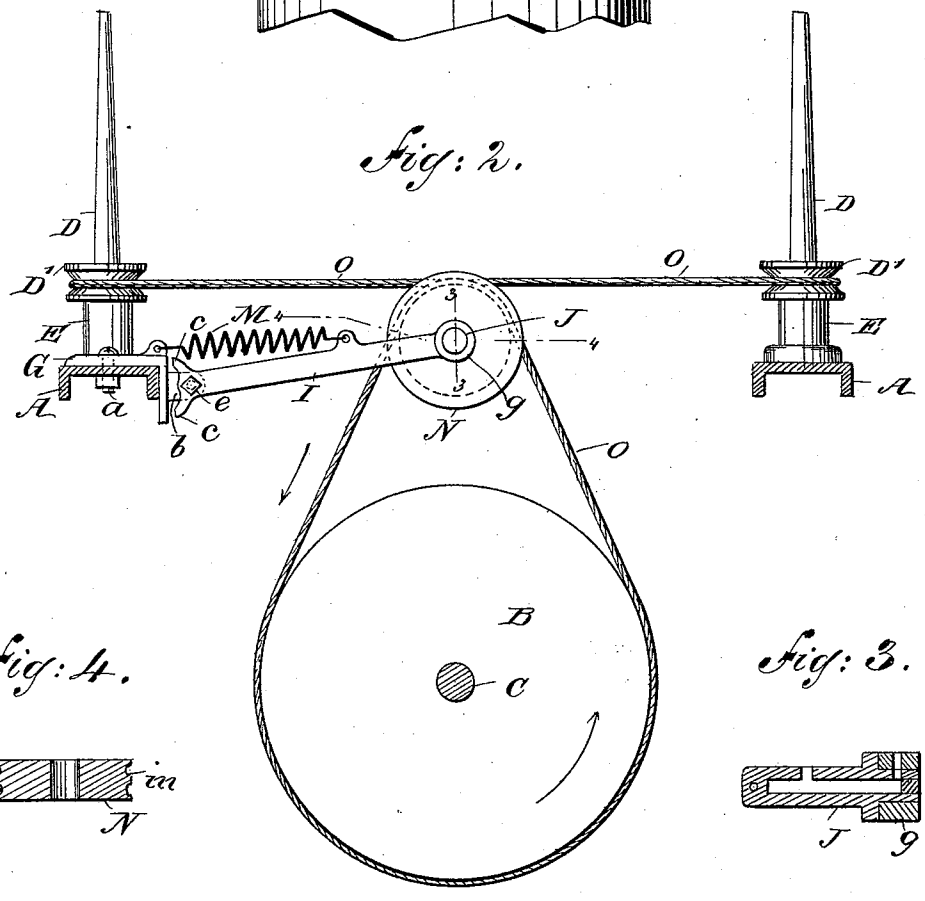

Fig: 4.

Fig: 3.

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TENSION DEVICE FOR SPINNING-FRAMES.

SPECIFICATION forming part of Letters Patent No. 520,473, dated May 29, 1894.

Application filed June 13, 1893. Serial No. 477,409. (No model.)

To all whom it may concern:

Be it known that I, ROBERT ATHERTON, of Paterson, in the county of Passaic and State of New Jersey, have invented a new and useful Improved Tension Device for Spinning-Frames, of which the following is a full, clear, and exact description.

As usually constructed, spinning frames for the production of yarn from fibrous material have a separate band for each spindle, to drive the latter from the main drum of the machine. Heretofore, it has been found difficult to maintain all the spindles of a spinning frame in efficient working condition when operated by a band for each spindle, owing to the expansion and contraction of said bands, due to changes of temperature and degree of humidity pervading the atmosphere.

The object of my invention is to provide a novel, simple and effective attachment for spinning frames, whereby the tension between the drum and spindles will be automatically adjusted, and changes in the length of the spindle-driving bands be instantly compensated for; a further object being to provide reliable means for the communication of a uniform speed to series of spindles on the spinning frame, and avoid an excessive tension in the driving belts, thereby reducing the friction of the spindles in their supporting bolsters, to a minimum degree.

To these ends, my invention consists in the construction and combination of parts, as is hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view in part, of a spinning frame, two opposite spindles thereon, and the improvement applied to said frame. Fig. 2 is a transverse sectional view, on the line 2—2 in Fig. 1. Fig. 3 is an enlarged detached sectional view of a detail of construction of the improvement, taken on the line 3—3 in Fig. 2; and Fig. 4 is a detached transverse sectional view of a feature of the invention, on the line 4—4 in Fig. 2.

The parts A A, in Figs. 1 and 2, represent portions of the parallel horizontal spindle rails of a spinning frame of the usual approved construction, and B, indicates the driving drum that in complete form is rotatably sustained by journal ends of the center shaft C, whereon the drum is secured, said shaft being mounted in proper boxes on end portions of the frame (not shown) and adapted for rapid rotation in the direction of the curved arrow in Fig. 2.

On the rails A, at opposite points, two similar spindles D, are shown, supported by their bolsters E, wherein they are designed to revolve, the bolsters being secured upon the top surfaces of the rails by any approved method, each spindle having a whirl D′, secured upon it to afford means for its rapid revolution. The pair of opposite spindles D, are two of a series of similar devices which at spaced intervals are sustained by the rails A, the novel band tension device shown and to be described, being provided for each pair of opposite spindles on the spinning frame of which said rails are members.

On one rail A, at the side of the spinning frame toward which the drum B revolves, and suitably removed from the bolster E, a bracket plate G, is secured by a bolt *a*, or equivalent means. A portion of the plate G is preferably formed to depend on the inner side of the rail A, and from said portion an ear *b* is projected.

A carrier arm I, is provided, having two toes *c*, projected oppositely from its top and bottom edges, and at one terminal, which end portion of the arm is loosely secured by the pivot bolt *e* to the ear *b*, the toes being in such proximity to the depending portion of the plate G, as will adapt them to limit the vertical vibration of the arm to a proper degree. Preferably, the length of the carrier arm I, is proportioned so as to dispose its free end about in the vertical plane of the shaft C, and upon said end a hub *g* is formed that is transversely perforated at its center for the reception of a journal pin J, that will be further described.

A contractile spring M, is secured by one end to the upper edge of the carrier arm I, and by its opposite end to the bracket plate G, or other convenient point on the rail A, said spring being designed to normally sustain the arm I, above a horizontal plane.

There is an idler wheel N, loosely mounted

on the journal pin J, and prevented from displacement by a washer *h*, and cross pin *i*, or by other suitable means, said wheel having two spaced grooves *m* in its periphery. For the proper arrangement of the tension device the bracket plate G, and parts supported by it should be so located that the bottoms of the grooves in the whirls D′, and the rib or flange between the grooves *m*, in the idler wheel nearly align, as indicated in Fig. 1. The journal pin J, is axially perforated for a portion of its length, and in its side wall intersecting perforations are formed, as shown in Fig. 3, for the introduction of a lubricant to reduce friction of the idler wheel I, on said pin.

The endless band O, provided to communicate motion from the drum B to the spindles D, is made to engage the lower portion of the drum and partly encircle the same. From the drum the band O is upwardly extended and carried in opposite directions over the upper portion of the idler wheel N, engaging its parallel grooves *m*, and thence is outwardly carried toward the opposite whirls D′, around which the band passes from the sides of the bolsters that are nearest to the median vertical plane of the idler wheel. The length of the doubled portions of the band O, is proportioned so that they will be stretched taut a proper degree to insure the correct rotation of the spindles D, without objectionable side draft on the spindles that would produce improper frictional resistance, the carrier arm being sustained in a plane inclined above a horizontal position.

It will be seen, that if the band O, becomes slightly relaxed, the tension of the spring *m*, will be sufficient to take up such a slackness of the band, as it will then raise the arm I and tighten the band, a subsequent contraction of the band due to atmospheric conditions, being compensated for by the expansion of the spring M, so that by the provision of the improved tension regulating mechanism for each pair of opposite spindles on a spinning frame, the operation of said spindles is rendered more perfect, and frictional resistance due to changes in the length of spindle-driving belts is regulated to the requisite degree.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

The combination, with a spinning frame, spindles thereon, and driving drum, of a tension attachment consisting of an angle bracket secured to the spindle rail, and having an ear *b* projecting from its vertical member, an arm I pivoted at its inner end to said ear and having stop lugs *c* above and below its pivot, adapted to contact with the vertical member of the bracket, an idler at the outer, free end of the arm I, having two annular grooves and an intervening rib, a spiral spring connected at one end with the arm I between the free end and the pivot of the latter, and connected at the opposite end with the angle bracket, and a driving belt for the spindles, the belt passing partly around the driving drum, thence from each side of the drum, over the idler, in the respective annular grooves, and thence to and around the spindles, the crossing portions of the band being separated and held out of frictional contact by the annular rib of the idler, the spring tending to move the idler away from the drum, substantially as described.

ROBERT ATHERTON.

Witnesses:
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